Trend Study 16B-23-99

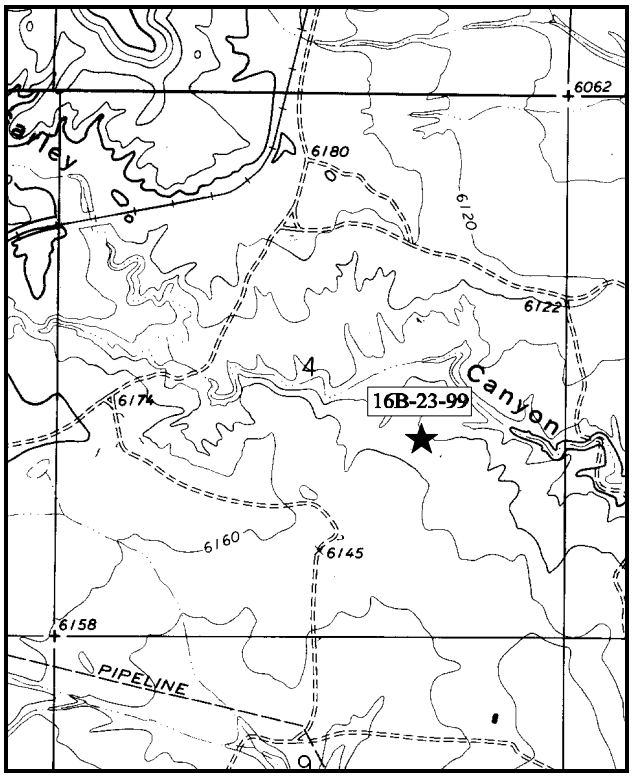
Study site name: Consumer Bench . Range type: Big Sagebrush - Grass .

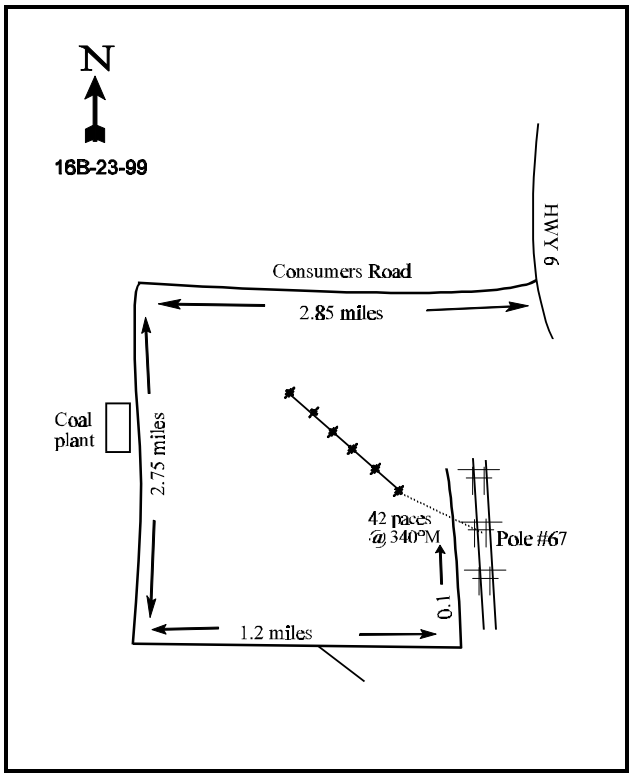
Compass bearing: frequency baseline 328°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

On US 6 south of Helper, turn right (west) on Consumer Road and travel 2.85 miles. Turn left on a dirt road, and go 2.75 miles passing a coal plant. Turn left and travel 0.7 miles to a fork. Stay left for an additional 0.5 miles to another fork. Turn left and go 0.1 miles to a telephone pole (#67). The 0' stake is 42 paces away at 340°M from the telephone pole.





Map Name: Standardville Diagrammatic Sketch

Township 14S , Range 9E , Section 4 UTM 4386343.503 N, 507495.860 E

DISCUSSION

Trend Study No. 16B-23 (30-9)

The Consumer Bench trend study was established on this bench to monitor deer and elk winter range administered by the BLM. The site monitors a Wyoming big sagebrush/grass vegetation type with a few scattered junipers at an elevation of 6,000 feet. The aspect is southwest and the slope is gentle at approximately 5%. The site occurs within the Consumers Wash allotment. The area where the site sits is allotted for 54 sheep from October 1 to April 21, with an additional 821 sheep from April 21 until June 20. Use by wildlife is currently high. Pellet group transect data in 1999 estimate 90 deer days use/acre (223 ddu/ha) and 64 elk days use/acre (159 edu/ha).

The soil is a sandy loam with few rocks on the surface or within the profile. The estimated stoniness index is more a measure of a compacted layer about 12 inches below the surface than the presence of rock. The soil is moderately deep with an estimated effective rooting depth of over 16 inches. The soil has a slightly alkaline pH (7.8), and is low in both phosphorus (3.3 ppm) and potassium (41.6 ppm), which are well below the minimum levels of 10 ppm and 70 ppm determined necessary for normal plant development. Bare ground cover was high at 46% in 1994, but decreased to 36% in 1999. The well dispersed vegetation cover and gentle terrain limit erosion so it is not a serious problem.

The key browse species consists of a moderate stand of Wyoming big sagebrush. The BLM is concerned that the sagebrush in the area is in a state of decline. Currently, the population density is estimated at 4,480 plants/acre, an increase of 15% since 1994. Currently, the population shows a well balanced age class with 55% mature, 27% decadent, and 17% young. Biotic potential is moderate with 300 seedlings/acre being estimated in 1999. This age class structure is nearly identical to that sampled in 1994. Percent decadence is average at 28% in 1994, and 27% in 1999. The proportion of decadent plants classified as dying decreased from 37% in 1994 to 28% in 1999. Utilization was mostly light in 1994, however use has increased to 26% moderate use and 47% heavy use in 1999. Plants with poor vigor were similar between 1994 and 1999, 10% and 11% respectively. There are a high number of dead sagebrush on the site indicating a larger population in the past. Currently, 1 out of every 5 plants is dead. The only other preferred browse on the site consists of a few small winterfat. Snakeweed and prickly pear are the only other abundant browse on the site. Snakeweed is expanding with an 84% increase in 1999, and appears it will continue to increase in the future with half of the population being young.

The herbaceous understory is quite abundant for a Wyoming big sagebrush site. Grasses provide over half of the total vegetation cover in both 1994 and 1999, with nearly all of this coming from perennial species. Six perennial species are present including: blue grama, Salina wildrye, Indian ricegrass, bottlebrush squirreltail, subalpine needlegrass, and needle-and-thread. All perennial grasses increased or remained stable in nested and quadrat frequency except for needle-and-thread which decreased in both. Forbs are diverse but not abundant. Scarlet globemallow is the dominant forb providing 46% of the forb cover in 1999, and occurring in 62% of the sampling quadrats.

1994 APPARENT TREND ASSESSMENT

Average cover of bare ground is high at 45.9%, but due to the gentle terrain and the abundance of herbaceous vegetation, erosion does not seem to be a major problem. The apparent trend for soil is stable. The browse trend is also stable for the time being. The biotic potential (number of seedlings) and reproductive potential (number of young) are sufficient at 7% and 17% respectively to replace dying shrubs on the site. It is apparent by the large number of dead shrubs counted that the population was once larger. Increaser shrubs, broom snakeweed and rabbitbrush are not abundant and do not have age classes of expanding populations. The herbaceous understory is abundant. Perennial forbs are lacking somewhat. Currently, grasses and forbs account for 60% of the vegetation cover. Blue grama, a warm season grass, and needle-and-thread are the dominant grasses on the site.

1999 TREND ASSESSMENT

Trend for soil is slightly improved. Bare ground is still moderately high at 36%, but decreased from 46% in 1994. Vegetation and litter cover both increased in 1999, resulting in better protective ground cover to hold soils in place. The key browse species, Wyoming big sagebrush, shows a stable trend. Age class distribution of the population is nearly identical to the 1994 reading. The proportion of the population classified as decadent, and those showing poor vigor are about the same as 1994 levels. Biotic potential and recruitment remain at moderate levels, currently at 7% and 17% respectively. The only negative aspect with Wyoming big sagebrush is that the level of use has greatly increased. In 1999, 26% of the population displayed moderate use, with an additional 47% showing heavy use. Continued high use could reverse the stability of this species in the future, especially if accompanied by drought. Broom snakeweed is expanding with an 84% increase in density in 1999. Half of the population is young plants which indicates more expansion in the future. The overall trend for browse is stable. The herbaceous understory shows a slightly upward trend. Sum of nested frequency for grasses and forbs increased in 1999. Perennial grasses are the most abundant group in cover and frequency.

TREND ASSESSMENT
soil - slightly improved
browse - stable for the key species Wyoming big sagebrush
herbaceous understory - slightly up

HERBACEOUS TRENDS --
Herd unit 16B, Study no: 23

Type	Species	Nested Frequency '94	Nested Frequency '99	Quadrat Frequency '94	Quadrat Frequency '99	Average Cover % '94	Average Cover % '99
G	Bouteloua gracilis	195	193	55	54	6.22	4.79
G	Elymus salina	86	105	24	32	.95	2.59
G	Oryzopsis hymenoides	114	*159	47	58	2.06	3.80
G	Sitanion hystrix	24	22	10	14	.39	.56
G	Sporobolus cryptandrus	1	-	1	-	.00	-
G	Stipa columbiana	14	*64	5	18	.39	2.44
G	Stipa comata	167	*78	56	26	4.30	1.88
G	Vulpia octoflora (a)	-	6	-	3	-	.01
Total for Annual Grasses		0	6	0	3	0	0.01
Total for Perennial Grasses		601	621	198	202	14.34	16.09
Total for Grasses		601	627	198	205	14.34	16.11
F	Astragalus convallarius	6	*39	2	16	.01	.19
F	Astragalus spp.	7	*-	4	-	.04	-
F	Castilleja linariaefolia	-	*17	-	8	-	.04
F	Calochortus nuttallii	-	*11	-	8	-	.04
F	Comandra pallida	-	*10	-	5	-	.02
F	Collinsia parviflora (a)	17	15	6	6	.06	.25
F	Cymopterus spp.	-	3	-	1	-	.00
F	Descurainia pinnata (a)	3	1	1	1	.00	.01

Type	Species	Nested Frequency '94	'99	Quadrat Frequency '94	'99	Average Cover % '94	'99
F	Eriogonum cernuum (a)	4	-	2	-	.01	-
F	Eriogonum ovalifolium	5	16	3	6	.04	.34
F	Lepidium montanum	12	3	4	2	.21	.01
F	Machaeranthera canescens	1	3	1	1	.00	.03
F	Penstemon linarioides	3	-	1	-	.00	-
F	Penstemon spp.	11	*3	4	1	.02	.03
F	Phlox longifolia	26	*50	9	15	.05	.15
F	Plantago patagonica (a)	3	2	1	2	.00	.01
F	Schoencrambe linifolia	7	*17	3	10	.01	.07
F	Sphaeralcea coccinea	128	166	51	62	.93	1.04
F	Tragopogon dubius	-	2	-	1	-	.00
Total for Annual Forbs		27	18	10	9	0.08	0.26
Total for Perennial Forbs		206	340	82	136	1.33	2.00
Total for Forbs		233	358	92	145	1.41	2.27

* Indicates significant difference at % = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 16B, Study no: 23

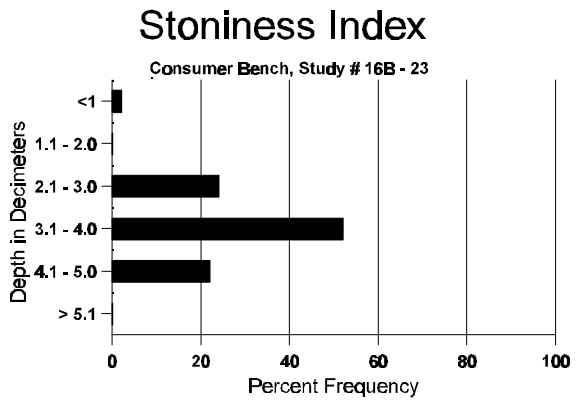
Type	Species	Strip Frequency '94	'99	Average Cover % '94	'99
B	Artemisia tridentata wyomingensis	77	74	9.19	10.31
B	Ceratoides lanata	2	1	-	.00
B	Chrysothamnus viscidiflorus	1	2	-	.15
B	Gutierrezia sarothrae	28	62	.78	.97
B	Opuntia spp.	29	21	.51	.66
B	Pinus edulis	0	1	-	-
Total for Browse		137	161	10.49	12.11

BASIC COVER --
Herd unit 16B, Study no: 23

Cover Type	Nested Frequency '94	'99	Average Cover % '94	'99
Vegetation	411	423	24.62	32.35
Rock	33	4	.05	.01
Pavement	35	39	.44	.26
Litter	473	470	17.95	24.32
Cryptogams	119	292	1.43	11.09
Bare Ground	457	400	45.88	36.49

SOIL ANALYSIS DATA --
Herd Unit 16B, Study # 23, Study Name: Consumer Bench

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
16.4	56.4 (16.3)	7.8	54.7	27.4	17.8	1.7	3.3	41.6	0.6



PELLET GROUP FREQUENCY --
Herd unit 16B, Study no: 23

Type	Quadrat Frequency '94	'99	Pellet Transect Days Use/Acre (ha) '99
Rabbit	6	66	n/a
Elk	20	17	64 (158)
Deer	55	58	90 (222)
Cattle	0	0	1 (2)

BROWSE CHARACTERISTICS --
Herd unit 16B, Study no: 23

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata wyomingensis																		
S	94	3	-	-	10	-	-	-	-	-	13	-	-	-	260			13
	99	15	-	-	-	-	-	-	-	-	15	-	-	-	300			15
Y	94	32	1	-	-	-	-	-	-	-	33	-	-	-	660			33
	99	31	2	-	-	6	-	-	-	-	34	-	-	5	780			39
M	94	90	12	-	2	-	-	-	-	-	104	-	-	-	2080	16	26	104
	99	15	36	42	-	5	21	5	-	-	119	4	1	-	2480	17	30	124
D	94	35	15	-	4	-	-	-	-	-	34	-	-	20	1080			54
	99	5	5	18	2	4	25	2	-	-	42	-	2	17	1220			61
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	1660			83
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	1200			60

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	15%	00%	10%	+15%
'99	26%	47%	11%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	3820	Dec:		28%
'99	4480			27%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Ceratoides lanata																		
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	94	3	-	-	-	-	-	-	-	-	3	-	-	-	60	9	8	3
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3	4	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	-67%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	60	Dec:		-
'99	20			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus																		
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
M	94	3	-	-	-	-	-	-	-	-	3	-	-	-	60	7	18	3
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	4	10	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	+ 0%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	60	Dec:		-
'99	60			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	111	-	-	-	-	-	-	-	-	111	-	-	-	2220			111
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	160	-	-	-	-	2	-	-	-	162	-	-	-	3240			162
M	94	49	-	-	-	-	-	-	-	-	49	-	-	-	980	8	9	49
	99	159	1	-	-	-	-	-	-	-	159	-	1	-	3200	4	4	160
D	94	-	-	2	-	-	-	-	-	-	2	-	-	-	40			2
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	120			6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	04%	00%	+84%
'99	.30%	.61%	.30%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	1020	Dec:		4%
'99	6460			0%

Opuntia spp.																		
S	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	94	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	99	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	94	42	-	-	-	-	-	-	-	-	42	-	-	-	840	3	10	42
	99	25	-	-	-	-	-	-	-	-	25	-	-	-	500	3	9	25
D	94	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	99	5	-	-	-	-	-	-	-	-	3	-	-	2	100			5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	-24%
'99	00%	00%	06%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	920	Dec:		4%
'99	700			14%

Pinus edulis																		
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	0	Dec:		-
'99	20			-